A new *Cerodirphia* from Peru (Lepidoptera: Saturniidae, Hemileucinae)

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Abstract: A new species of the genus *Cerodirphia* Michener, 1949 is described from a unique specimen collected in northern Peru. ***C. barbuti* n. sp.** (holotype ♂, deposited in Muséum national d'Histoire naturelle, Paris, France) is related to a group of three Ecuadorian species characterized by their black abdomen lacking white intersegmental bands. It is recognizable by the reduced discocellular spot of its forewing and by a striking character of the male genitalia.

Key words: Saturniidae, Hemileucinae, *Cerodirphia*, new species, Peru, Neotropical.

Un nouveau *Cerodirphia* du Pérou (Lepidoptera: Saturniidae, Hemileucinae)

Résumé : Une nouvelle espèce du genre *Cerodirphia* Michener, 1949 est décrite à partir d'un spécimen unique récolté dans le nord du Pérou. ***C. barbuti* n. sp.** est rapprochée d'un groupe de trois espèces équatoriennes caractérisées par leur abdomen noir et dépourvu de bandes transversales blanches entre les segments. Cette nouvelle espèce est reconnaissable à son point discocellulaire réduit aux ailes antérieures et à un caractère très net des pièces génitales mâles.

Una nueva *Cerodirphia* del Peru (Lepidoptera: Saturniidae, Hemileucinae)

Resumen: Se describe una nueva especie del genero *Cerodirphia* Michener, 1949, basado en un espécimen recolectado en el norte del Perú. *C. barbuti* n. sp. muestra mucho parentesco con un grupo de tres especies ecuatorianas caracterizadas por su abdomen negro sin anillos blancos transversales entre los segmentos. Esta especie se reconoce por el punto discocelular reducido en las alas anteriores y por un carácter muy distincto en los genitales del macho.

Eine neue *Cerodirphia* von Peru (Lepidoptera: Saturniidae, Hemileucinae)

Zusammenfassung: Eine neue Art der Gattung *Cerodirphia* Michener, 1949 wird beschrieben, basierend auf einem Einzelstück aus Nordperu. Die neue Art ***C. barbuti* n. sp.** (Holotypus ♂ in Muséum national d'Histoire naturelle, Paris, Frankreich) gehört am nächsten zu einer Gruppe von drei ecuadorianischen Arten, die sich durch schwarze Abdomina ohne weiße Intersegmentalstreifen auszeichnen. Die neue Art kann über den reduzierten Diskalfleck des Vorderflügels und deutliche Unterschiede im männlichen Genitalapparat unterschieden werden.

Introduction

The genus *Cerodirphia* Michener, 1949 currently encompasses about 30 species of medium-sized moths distributed from western Mexico to Bolivia and south-eastern Brazil, and flying from low (i.e. the Amazonian basin) to very high altitudes (up to 3250 m in the Andean cordillera). The taxonomy of this genus was treated extensively and comprehensively in the recent revision of the whole subfamily Hemileucinae by the late Claude Lemaire (2002).

Lemaire, relying upon characters of the habitus of the adults, divided the genus into two species-groups:

1. the group of *C. opis* (Schaus, 1892), and
2. the group of *C. speciosa* (Cramer, 1777), more numerous in species.

The members of the first group display the typical wing-pattern of most genera of the Hemileucinae, whereas the species in the second group show a homogenous reduced pattern in which the only consistent marking is a large Y-shaped discal-spot on the forewing. Within this second group, Lemaire (1988a, 2002) distinguished three closely related species (*C. flavoscripta* (Dognin, 1901), *C. cutteri* (Schaus, 1927), and *C. lojensis* Lemaire, 1988) sharing the absence of white bands on the upperside of the abdomen, and restricted to high elevation localities in central and southern Ecuador.

A new species related to these three species was discovered and is described below from a single specimen recently collected in Peru.

Cerodirphia barbuti n. sp.

Holotype: ♂, Peru, Cajamarca province, road from Celendin to Cajamarca, km 48, 3400 m, 17. ix. 2003, UV light, leg. J. Barbut, A. Lévêque & B. Vincent, genitalia prep. S-RR#43 Rougerie.

Type deposition: The holotype is deposited in the collection of the Muséum national d'Histoire naturelle, Paris, France (MNHN).

Etymology: The new species is dedicated to our friend and colleague Jérôme Barbut.

Description

♂ (Figs. 1–2): wingspan 67 mm; forewing length from base to apex 36 mm. Antennae straw yellow, 10 mm long (27 segments), quadripectinate up to the apex; distal pair of rami shorter and side by side with the basal pair of the following segment; a mediodorsal strong erected seta present at the apex of each article. Frons and anterior part of the tegulae covered with dark brown scales; labial palpi pink; femur and tibia clothed with pink and brown hair, tarsi pink dorsally, straw yellow ventrally. Upperside of the thorax hairy, bearing erected scales forming a dense tuft; pro- and mesothorax straw yellow, metathorax pink. Abdomen black dorsally and laterally, sternites covered with yellowish brown scales; anal tuft pink. Forewing rounded. Ground colour pink, strongly attenuated on forewing with straw yellow scales, especially in the costal and apical parts; the moth thus appearing clearly divided into an anterior straw yellow part (forewings, antennae, pro- and mesothorax) and a posterior pink part (hindwings and metathorax). Discal spot on

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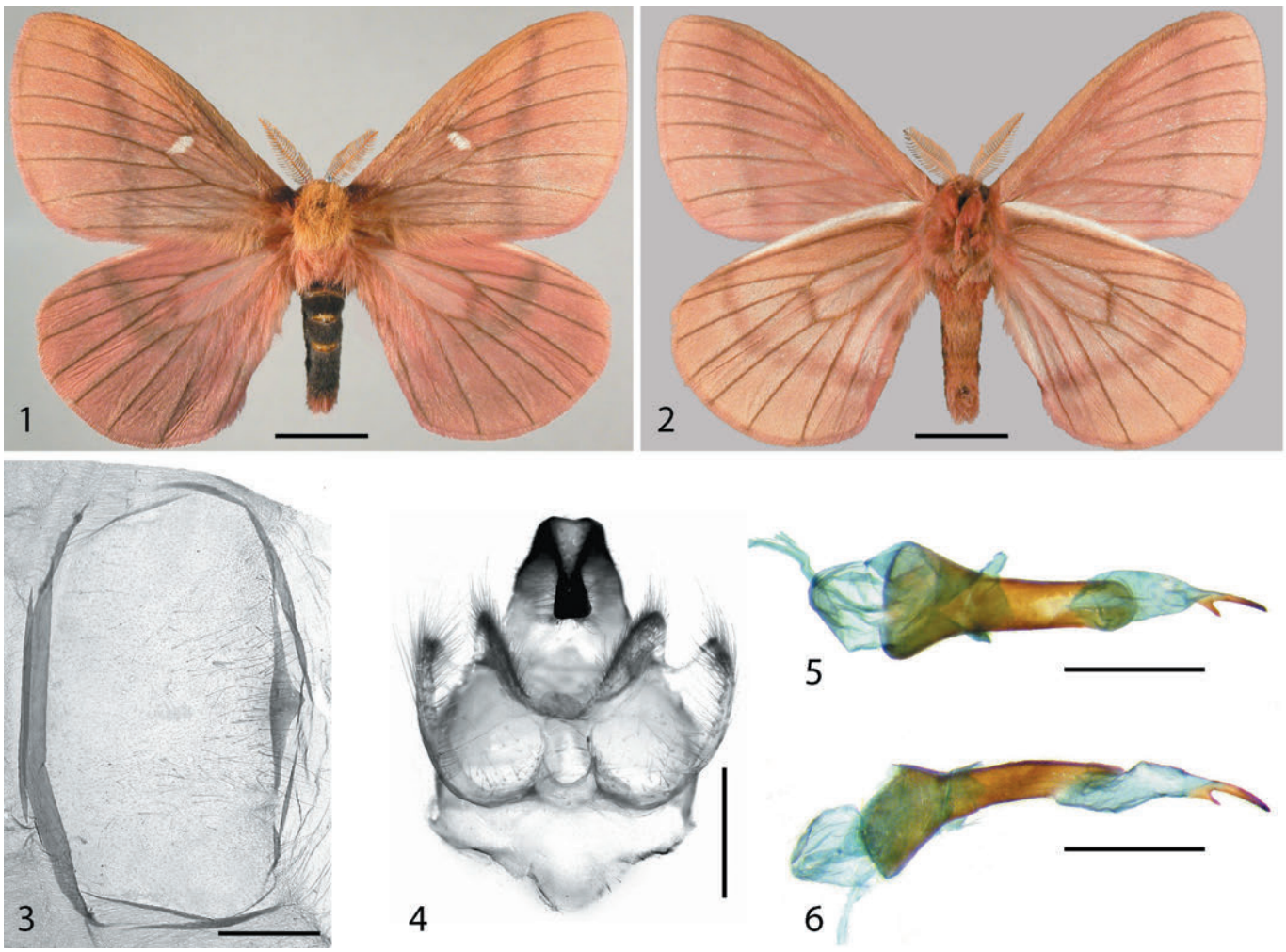

Figs. 1–6: *Cerodirphia barbuti* n. sp. holotype ♂ (genitalia prep. S-RR#43 Rougerie). **Fig. 1:** Upperside. **Fig. 2:** Underside. **Fig. 3:** Eighth sternite in ventral view, anterior to the left. **Fig. 4:** Genitalia in ventral view, aedeagus removed. **Figs. 5–6:** Aedeagus in ventral (Fig. 5) and lateral view (Fig. 6), anterior to the left. — Scale bars, Figs. 1–2: 10 mm, Figs. 3–6: 1 mm.

forewing reduced to a small white oval mark along the posterior transverse vein (d3). The four wings with a brown postmedial line becoming indistinct in the anal part of the hindwings; venation underlined with brown scales; fringes pink. Underside paler, ground colour straw yellow, forewing pinkish in its basal part; markings similar to the upperside, but discal spot on forewing absent, and postmedian line reaching the anal margin of the hindwing; costal margin of the latter white.

♀: Unknown.

♂ **Genitalia** (Figs. 3-6): eighth sternum (Fig. 3) bearing ventrally a number of posteriorly oriented setae; its posterior margin with a short unsclerotized median projection.

Genital parts (Fig. 4): Uncus broad, its dorsoposterior margin concave, forming two short downcurved teeth; apex of the uncus ventrad, simple, setose, highly sclerotized, and forming an apically enlarged elongated plate. Gnathos present and apparently merged with the transtilla; median plate of the later narrow, weakly sclerotized, and with a slightly convex posterior margin; this plate anteriorly connected to the juxta; lateral arms of the transtilla free from the valves and forming well developed, highly setose, rounded lobes. Valves simple, short, highly setose and posteriorly rounded; their basal area fused to the lateral parts of the juxta; the latter forming thus a weakly sclerotized median structure fused ventrally to the vinculum, dorsally to the transtilla, and laterally to the valves. Saccus very short, its anterior margin rounded.

Aedeagus (Figs. 5-6) short, simple, with a somewhat depigmented median area on its apical dorsal third; caecum penis strongly enlarged; vesica (cornutus not included) almost half the aedeagus length long, evaginating ventrally, and bearing a single apical cornutus consisting in two basally connected sclerotized teeth; the upper one being four times as long as the lower one.

Immature stages

Unknown. According to Lemaire (2002), the last instar of *C. apunctata* Dias & Lemaire, 1991 and *C. speciosa* were illustrated in the literature (Moraes & Travassos Filho 1983, Lemaire 2002). Interestingly, *C. cutteri* was recently reared successfully (Kirby Wolfe, personal communication), and one can reasonably think that its preimaginal instars are very similar to that of *C. barbuti*. An unpublished picture by Kirby Wolfe of the last instar larva of *C. cutteri* can be seen on the worldwide web at:

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http://www.insectcompany.com/silkmoth/kwccutteri.htm

Geographic distribution

This species is only known from the type locality, in the northern part of the Andean corridor of the Peruvian cordillera. *C. barbuti* flies at very high altitude (3400 m – this is the highest known locality for a member of the genus *Cerodirphia*) in a mix of grazed lands, scattered bushes and small trees. The male specimen was attracted to light in the beginning of the night.

Discussion

Cerodirphia barbuti is immediately recognizable by the unusual discal spot on the forewing that is not Y-shaped as in all of the three closest species with black abdomen lacking transversal white bands, namely *C. cutteri*, *C. flavoscripta*, and *C. lojensis*. The two latter species (plate 87, fig. 10 and plate 88 fig. 5 in Lemaire 2002) are much darker that *C. barbuti* and can also be easily distinguished by the white fringes of the hindwings. From the habitus of the male, *C. barbuti* appears then to be most closely related to the highly variable *C. cutteri* (plate 88, figs. 2–3 in Lemaire 2002); among the numerous specimens of *C. cutteri* observed, a few of them displayed a similar wing pattern with straw yellow forewings and pink hindwings. It was then considered that the holotype of *C. barbuti* might be an extreme form of *C. cutteri* showing a very unusual reduced discal spot. However, whereas this spot is dark yellow in *C. cutteri*, it is white in *C. barbuti*.

This difference is supported by a striking difference in the male genitalia; although their general shape is very similar in the three species cited above, the configuration of the cornuti on the vesica of *C. barbuti* strongly differs from that of the related species. In *C. barbuti*, the apex of the vesica bears two unequal and basally connected teeth (fig. 6), whereas in *C. cutteri* (fig. 92.1 in Lemaire 2002), C. *lojensis* (fig. 92.2 in Lemaire 2002) and *C. flavoscripta* (fig. 91.6 in Lemaire 2002) the vesica bears two clearly separated teeth, one apical, and a second one ventral and situated at the half-length of the vesica. This latter cornutus did not appear on Lemaire's figure of the aedeagus of *C. cutteri*, but it was seen as traces in most of the preparations of this species we observed for this study.

Conclusions

The coincidence of differences in the male habitus and genitalia strongly supports our statement that *C. barbuti* is a valid new species. Biogeography is also a strong argument in favour of the distinction of this species from related Ecuadorian species. First, high elevations are known to generate a high speciation rate, notably in saturniids; second, there is a known definite disjunction zone between Ecuador and Peru, where the Andean Cordillera is strongly interrupted by a large low altitude dry area. According to the present knowledge of saturniid distribution patterns in South-America (Lemaire 1978, 1988b, 2002), some species flying at very high elevation have bridged this gap (i.e. *Copaxa semioculata* R. Felder & Rogenhofer, 1874, *C. medea* Maassen, 1890, *Leucanella lynx* (Bouvier, 1930)), but a number have not (i.e. *Hirpida gaujoni* (Dognin, 1894), *Automeris micheneri* Lemaire, 1966, *Cerodirphia porioni* Lemaire, 1982, *Bathyphlebia rufescens* Oiticica & Michener, 1950). *C. barbuti*, flying ca. 500 km south from the southernmost known locality of *C. cutteri* in Ecuador, probably belongs to this second group.

Further prospecting is now needed to discover the female of *C. barbuti* and to obtain some more information about this species such as intraspecific variability, distribution range, biology, etc. With regards to the possibly extreme form of the holotype of *C. barbuti*, the discovery of darker specimens or individuals with classical Y-shaped discal spot might be expected.

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